

CASE-ONLY ANALYSIS OF INTERACTION BETWEEN PRE-HOSPITALIZATION RESPIRATORY TREATMENTS AND PM₁₀ EXPOSURE. RESULTS FROM ADMINISTRATIVE DATABASES

Giovanni De Vito, *Department of Clinical Medicine and Prevention, University of Milan-Bicocca, Milan, Italy*

Sara Conti, *Department of Clinical Medicine and Prevention, University of Milan-Bicocca, Milan, Italy*

Alessandra Lafranconi, *Department of Clinical Medicine and Prevention, University of Milan-Bicocca, Milan, Italy*

Joel Schwartz, *Department of Environmental Health, Harvard School of Public Health, Boston, MA, USA*

Antonella Zanobetti, *Department of Environmental Health, Harvard School of Public Health, Boston, MA, USA*

Carla Fornari, *Department of Clinical Medicine and Prevention, University of Milan-Bicocca, Milan, Italy*

Fabiana Madotto, *Department of Clinical Medicine and Prevention, University of Milan-Bicocca, Milan, Italy*

Giancarlo Cesana, *Department of Clinical Medicine and Prevention, University of Milan-Bicocca, Milan, Italy*

Background and Aims: While many studies have reported associations of air pollution with hospital admissions, little is known about whether pre-event medical treatments modify those associations. Our study analyzed how pre-admission respiratory pharmacological treatments affect the relationship between PM₁₀ and hospitalizations for respiratory diseases.

Methods: Hospital admissions for respiratory causes (ICD-9-CM 460-466, 480-487, 491, 493, 5130 and 5188) during 2005 in the residents of six cities of Lombardy (Northern Italy), accounting for roughly 500.000 inhabitants, were selected. For each hospitalized subject we determined which respiratory treatment he/she was undergoing, using record linkage with pre-hospitalization medical prescriptions for respiratory drugs. Daily average concentration of PM₁₀ and temperature were provided by the Regional Agency for Environmental Protection of Lombardy. We used a case-only approach to analyze the modification of the effect of PM₁₀ on respiratory hospital admissions due to medical treatments. Separate models were fitted for systemic glucocorticoids, inhaled adrenergics, inhaled glucocorticoids, inhaled anticholinergics and theophylline. The models accounted for the simultaneous presence of different classes of respiratory treatments, long and short term confounding, heterogeneity among cities and effect of temperature.

Results: We selected 4,248 hospital admissions with a respiratory diagnosis and 7,717 respiratory prescriptions, related to 3,604 subjects. Pre-admission respiratory therapy was present in 39% of the admissions. The observed modification of the effect of PM₁₀ on respiratory hospitalizations was modest for all of the examined treatments. We observed a significant effect modification (results shown for a 10 • g/m³ increment in PM₁₀ concentration) associated with the use of systemic glucocorticoids before the hospitalization (OR=0.929, 95% CI, 0.892 – 0.967), which persists during the cold season (OR=0.927, CI 95% 0.881 – 0.976).

Conclusions: This pilot study, conducted on a reduced sample of the Northern Italian population, shows interesting evidences of a potential protective effect of systemic glucocorticoids against adverse respiratory consequences of exposure to PM₁₀.